

Disease-resisting Sugar-canes.

It is observed in your issue for November 7 last in the article entitled "Immunity to Disease among Plants," being an abstract of a letter delivered before the British Pharmaceutical Conference at Manchester by Prof. F. E. Weiss, that the following statement occurs:—

"In the West Indies, the Bourbon cane has been given up on account of disease, but very useful and disease-resisting hybrids have been produced by crossing the valuable but easily attacked Tjeribon cane with the resistant Indian Tschan cane."

The latter canes are not known in the West Indies, and it is desirable, therefore, that the actual facts be placed on record.

When the Bourbon sugar-cane had to be abandoned in the West Indies on account of its susceptibility to fungus disease, its place was generally taken by the White Transparent—an introduced variety. Since then the latter is being largely replaced by seedling canes. These seedlings have been produced in some instances from the Bourbon cane, and, recently, almost entirely from the better of the newer seedling varieties under experiment. It may be of interest to mention that in British Guiana the area under cultivation with varieties of sugar-cane other than Bourbon is about 30,000 acres, and the greater portion of this area is occupied by seedling canes. In the island of St. Kitts about 71 per cent. of the sugar-cane acreage is occupied by seedlings. Seedling canes are also being largely planted at Barbados, Antigua, St. Lucia, and Jamaica. Many of the newer seedlings appear to be immune to some of the fungus diseases that affect the sugar-cane in these colonies, and the efforts in the direction of producing seedling canes by artificial cross-pollination give promise of success.

In Java the circumstances are also somewhat similar. The Cheribon cane had to be abandoned on account of its being liable to the "sereh" disease, and amongst the foreign varieties introduced to take its place was the East Indian cane Chunnee. In 1894 it was found that the Cheribon cane bore a large proportion of infertile pollen with a normal ovary, while the Chunnee produced a very large quantity of fertile pollen. Advantage was taken of this to plant the two varieties side by side in the hope of producing hybrids by natural means. Considerable success has been attained, for a very large number of seedlings was obtained by sowing seeds from the "self-sterile" arrows of the Cheribon, many of which combine the high sugar content of the Cheribon with the disease-resisting power of the Chunnee. Other introduced canes have also been used in these experiments, and somewhat similar experiments are in progress in the West Indies.

A *résumé* of the "Improvement of the Sugar-cane by Selection and Hybridisation" (with coloured plates) was presented by Mr. F. A. Stockdale and myself at the conference on genetics held in London in August, 1906, under the auspices of the Royal Horticultural Society. The society issued a full report of the conference in February, 1907. The paper referred to has since been reproduced in the *West Indian Bulletin* (vol. vii., No. 4).

Barbados, February 14.

D. MORRIS.

Modern Views of Electricity.

To avoid misunderstanding, I write to say briefly, in connection with a review by "N. R. C." on p. viii of the supplement to NATURE of March 5, that I have never supposed space to be a conductor, but have always taught the opposite view; and that I have never imagined unmodified ether to be subject to gravitation, or to be other than the vehicle of that property of matter. If any phrases in my book suggest the contrary they are examples of faulty expression. But I would add, parenthetically, that I should not scruple to speak, untechnically, of the centre of gravity of a surface.

OLIVER LODGE.

NO. 2002, VOL. 77]

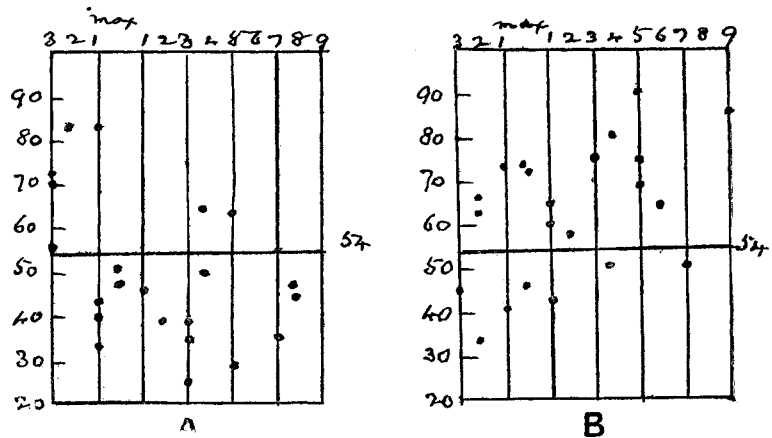
Rothsay Summers and Greenwich Winters.

LAST summer at Rothsay (N.B.) was very wet, with 14.8 inches (average, 11.3 inches). The current winter season at Greenwich may now be pronounced a mild one.

It is a curious fact (whatever the explanation) that a very wet summer at Rothsay tends to be followed by a mild winter at Greenwich, and a very dry summer by a severe winter. This is connected, I believe, with the fact that the rainfall of Scotland and the winter cold of Greenwich both exhibit pretty clearly the influence of the sun-spot cycle.

Suppose we pick out the twenty-two wettest and the twenty-two driest summers at Rothsay in the sixty-six years 1841–1906 (i.e. a third in either case). The former group range from 19.1 inches down to 12.6 inches; the latter from 5.9 inches up to 10.7 inches. Next, consider what sort of winter at Greenwich followed each of these (say, how many frost days in the period September to May).

These winters may be represented as in diagrams A and



The scale of frost days at Greenwich is shown on the left, and that of the sun-spot cycle at top of each diagram. A, Winters after very wet summers. B, Winters after very dry summers.

B, where a dot indicates by its position both the number of frost days of one winter and its position in the sun-spot cycle.

It will be seen that the twenty-two "very wet" Rothsay summers were followed by fifteen mild and seven severe winters at Greenwich (A), and the twenty-two "very dry" Rothsay summers by fifteen severe and seven mild winters at Greenwich (B). The contrast is still more pronounced if we confine attention to the period of decline of the sun-spots,

These diagrams seem to warrant two practical rules, which may be thus stated:—

During decline of the sun-spots, if summer rainfall at Rothsay exceeds 12.6 inches, a mild winter at Greenwich is highly probable (say, 6 to 1), and if during the same period the Rothsay summer rainfall is under 10.7 inches a severe winter is highly probable (say, 3 to 1). In the former case a very severe winter, and in the latter a very mild winter, would seem to be excluded.

We are at present close to a maximum (1905 or 1907?), and have to do with diagram A, which shows no severe winters for the corresponding position in the cycle.

ALEX. B. MACDOWALL.

The Possibility of Life in Mars.

At the risk of being thought by your correspondent, Mr. C. O. Bartrum, an "anthropomorphist," I consider that Prof. Lowell in his admirable investigations of the markings of Mars is quite reasonable in ascribing the change of colour to the presence of a vegetation containing a substance allied to, if not identical with, chlorophyll. I do so because the spectroscope has shown that, not only the solar system, but the whole universe, is built up of inorganic elements similar to those found on the earth. If we find unity of plan pervading the structure of the most

distant stars, surely it is not beyond credibility to assume that the organic worlds may have a like relationship to each other when other circumstances are favourable.

Hove, March 3.

W. AINSLIE HOLLIS.

The α Particles from Radio-active Substances.

THE experiments of Rutherford and Hahn have shown that the ratio e/m has the same value, 5×10^8 , for α rays, no matter from what source the rays are derived. They are, however, taken alone, incapable of deciding whether the particles are hydrogen molecules carrying the usual ionic charge, or helium atoms with twice that charge. In a recent paper in Roy. Soc. Proc., Prof. Townsend has shown that the positive ion produced by Röntgen rays has twice the ionic charge at the moment of formation. If his further experiments prove this true generally, then the question whether the α rays are hydrogen or helium must be definitely decided in favour of the latter, and the association of this gas with radio-active substances is accounted for.

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ANCIENT EGYPTIAN BURIAL CUSTOMS.¹

WE have had to wait some little while for Prof. Garstang's publication of his discoveries in the necropolis of Beni Hasan during the years 1902-3-4. However, "better late than never." The publication is issued under the auspices of the University of Liverpool, in which Mr. Garstang now professes the methods and practice of archæology. We must congratulate Prof. Garstang on his appointment. As a professional excavator of untiring industry and "go," he has been known to the archæological world for some years; and he has been a lucky excavator also. Nobody knows better than the digger that luck, no less than a keen eye and "sense of the probable," knowledge of the appearance of disturbed and undisturbed land, &c., is an important ally to him; and the discoverer of the other half of the Menes tablet at Nagada should gratefully admit his obligations to Dame Fortuna.

No such stroke of luck marked the excavations at Beni Hasan. The results were all what might have been expected and predicted of a necropolis of the eleventh and twelfth dynasties. Except for a few more than usually elaborate models and some very fine cartonnage mummy-coverings of a type not previously noted, they are not new. As always in tombs of this date, we have little but the rectangular coffins and models of workmen, slaves, boats with their crews, granaries, and so forth, which are well known in our museums. A large number of tombs was discovered, and the number of objects found in them was enormous. How to publish this huge mass of material, mostly of types already well known, was a difficult question.

To publish everything scientifically, in the manner of the Egypt Exploration Fund, would have been a most expensive task, as well as (since the antiquities found are mostly of a kind well known already) an unnecessary one. A scientific publication of similar type, but containing only the most important finds, would have been the expedient which most archæologists would have adopted. Prof. Garstang has, however, chosen rather to adopt a novel plan; he has written simply a description of the burial customs of the Egyptians under the Middle Kingdom, illustrated by typical examples of the objects found at Beni Hasan. Whether this decision was wise or

not it is difficult to say. As a matter of personal opinion, the other alternative of a modified publication on the lines of one of the annual volumes of the Egypt Exploration Fund would seem preferable. The result of Prof. Garstang's decision is that we have here a book which is at once a more or less popular work on the burial customs of ancient Egypt, but only deals with this subject in part, and a scientific report of the results of the excavations at Beni Hasan which is of unhandy form, and is written and illustrated in an inconvenient way. The book is too heavy as well as too expensive for a popular treatise, while for a scientific work the larger format of the Fund's publications is infinitely preferable. The treatment of the subject-matter is too general and scrappy for a scientific report, and the illustrations, being scattered throughout the text instead of concentrated in plates, may be appropriately arranged for a popular book, but are most ill designed for reference by the scientific student. On the whole, we think Prof. Garstang's decision unfortunate, and we hope that in future he will publish his discoveries in the admirable manner of his former publications, with their large, thin format and groups of plates at intervals throughout the volume. Let him keep his strictly scientific publica-



FIG. 1.—Position of the Pit Tombs below the Gallery.

tions and his *œuvres de vulgarisation* entirely apart. A popular book from his pen on the burial customs of ancient Egypt which should really cover the whole subject would be most welcome.

In spite of its defects, however, the present volume is a most interesting contribution to archæological literature. As specimens of the admirable photographs with which it is illustrated, we here reproduce in Fig. 1 a view showing the position of the pit-tombs excavated by Prof. Garstang in relation to the gallery-tombs of the princes of Beni Hasan, which are so well known to every visitor to Egypt; in Fig. 2 a view of the interior of a tomb as discovered and after removing the *débris*, which shows how the coffins and models of boats, &c., are found, and incidentally shows how thorough Prof. Garstang's archæological methods are in respect of complete photographic recording; and Fig. 3, a model of a group of two officers playing draughts on board ship, showing the cabin against which are propped their great shields and arrow-cases. This is a very interesting specimen of the numberless models found, which give us so complete an idea of what the

¹ "Burial Customs of Ancient Egypt." By Prof. J. Garstang. Pp. xv+250. (London: A. Constable and Co., Ltd., 1907.) Price 14. 11s. 6d. net.